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John A. Landis

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EXAMINER

SHINGLES, KRISTIE D

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/575,140	Applicant(s) LANDIS ET AL.	
	Examiner KRISTIE D. SHINGLES	Art Unit 2441	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 April 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>8/28/06</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claims 1-27 are pending.

Statutory Double Patenting

I. A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and useful process ... may obtain a patent therefor ..." (Emphasis added). Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957); and *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970).

A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the conflicting claims so they are no longer coextensive in scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.

II. **Claims 1-27 of this application conflict with Claims 1-6, 8, 9, 16, 34, 35, 37-51, 62, 76-86 of Application No. 10/575,632 (US Publication 2007/0028244).**

The identical subject matter of the conflicting claims includes:

- a virtual data center implemented on hardware resources of at least one host computer having at least one host processor and system resources including memory divided into most privileged system memory and less privileged user memory, the virtual data center comprising: virtualization software loaded on each host computer, said virtualization software operating in said less privileged user memory and dividing the host computer into a plurality of virtual partitions including at least one user guest partition and at least one system partition, said at least one user guest partition providing a virtualization environment for at least one guest operating system, and said at least one system partition maintaining a resource database for use in managing use of said at least one host processor and said system resources; at least one monitor that operates in said most privileged system memory and maintains guest applications in said at least one guest partition within memory space allocated by said at least one system partition to said at least one guest partition; a context switch between said at least one monitor and said respective guest and system partitions for controlling multitask processing of software in said partitions on said at least one host processor; and a software application that owns a configuration policy for said data center and

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- tracks persistence for respective domains to which each partition of said at least one host computer is assigned by said at least one system partition;
- an ultravisor partition;
 - resource database;
 - command partition;
 - configuration policy;
 - virtual partition definitions;
 - bootstrap techniques in the event of a partition failure or hardware failure of the host computer;
 - assigning partitions to zones;
 - partition migration;
 - changeable configuration policy; and
 - a method of implementing a virtual data center on hardware resources of at least one host computer having at least one host processor and system resources, comprising the steps of: dividing said at least one host computer into a plurality of virtual partitions including at least one user guest partition and at least one system partition, said at least one user guest partition providing a virtualization environment for at least one guest operating system, and said at least one system partition maintaining a resource database for use in managing use of said at least one host processor and said system resources; maintaining guest applications in said at least one guest partition within memory space allocated by said at least one system partition to said at least one guest partition; providing a context switch between said respective guest and system partitions for controlling multitask processing of software in said partitions on said at least one host processor; and assigning each partition to a domain of said at least one host processor in accordance with a configuration policy for said data center; and tracking persistence for respective domains to which each partition of said at least one host computer is assigned by said at least one system partition.

37 CFR 1.78(b) provides that when two or more applications filed by the same applicant contain conflicting claims, elimination of such claims from all but one application may be required in the absence of good and sufficient reason for their retention during pendency in more than one application. Applicant is required to either cancel the conflicting claims from all but one application or maintain a clear line of demarcation between the applications. See MPEP § 822.

Non-Statutory Double Patenting

III. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

IV. Claims 1 and 15 are provisionally rejected on the ground of nonstatutory double patenting over Claims 1 and 9 of copending Application No. 10/575,071 (US Publication 2007/0061441). This is a provisional double patenting rejection since the conflicting claims have not yet been patented.

The subject matter claimed in the instant application is fully disclosed in the referenced copending application and would be covered by any patent granted on that copending application since the referenced copending application and the instant application are claiming common subject matter, as follows:

- a virtual data center implemented on hardware resources of at least one host computer having at least one host processor and system resources including memory divided into most privileged system memory and less privileged user memory, the virtual data center comprising:
- virtualization software loaded on each host computer, said virtualization software operating in said less privileged user memory and dividing the host computer into a

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plurality of virtual partitions including at least one user guest partition and at least one system partition, said at least one user guest partition providing a virtualization environment for at least one guest operating system, and said at least one system partition maintaining a resource database for use in managing use of said at least one host processor and said system resources;

- at least one monitor that operates in said most privileged system memory and maintains guest applications in said at least one guest partition within memory space allocated by said at least one system partition to said at least one guest partition;
- a context switch between said at least one monitor and said respective guest and system partitions for controlling multitask processing of software in said partitions on said at least one host processor;
- a software application that owns a configuration policy for said data center and tracks persistence for respective domains to which each partition of said at least one host computer is assigned by said at least one system partition; and
- dividing said at least one host computer into a plurality of virtual partitions including at least one user guest partition and at least one system partition, said at least one user guest partition providing a virtualization environment for at least one guest operating system, and said at least one system partition maintaining a resource database for use in managing use of said at least one host processor and said system resources.

Copending application, 10/575,071 includes the distinctive features of the “system resources including physical I/O hardware” and an “input/output (I/O) partition that maps said physical I/O hardware to endpoints of an I/O channel server”. However, these features are obvious in a virtualized system divided into partitions, wherein it is understood and inherent that partitions of a host computer’s memory resources will undergo input/output operations.

Furthermore, there is no apparent reason why applicant would be prevented from presenting claims corresponding to those of the instant application in the other copending application. See *In re Schneller*, 397 F.2d 350, 158 USPQ 210 (CCPA 1968). See also MPEP § 804.

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Claim Rejections - 35 USC § 102

V. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

VI. **Claims 1 and 15 are rejected under 35 U.S.C. 102(e) as being anticipated by *Waldspurger et al* (US 6,725,289).**

a. **Per claim 1**, *Waldspurger et al* teach a virtual data center implemented on hardware resources of at least one host computer having at least one host processor and system resources including memory divided into most privileged system memory and less privileged user memory, the virtual data center comprising:

- virtualization software loaded on each host computer, said virtualization software operating in said less privileged user memory and dividing the host computer into a plurality of virtual partitions including at least one user guest partition and at least one system partition, said at least one user guest partition providing a virtualization environment for at least one guest operating system, and said at least one system partition maintaining a resource database for use in managing use of said at least one host processor and said system resources (*Figures 2 and 3, col.2 lines 39-65, col.3 line 64-col.4 line 27, col.7 lines 1-9, col.9 lines 1-49—virtual machine with guest system and guest operating system, manager system with system memory for maintaining control of the host resources*);
- at least one monitor that operates in said most privileged system memory and maintains guest applications in said at least one guest partition within memory space allocated by said at least one system partition to said at least one guest partition (*col.3 line 64-col.4 line 1, col.9 lines 50-col.10 line 22—virtual machine monitor operating on host maintains guest system with allocated memory*);
- a context switch between said at least one monitor and said respective guest and system partitions for controlling multitask processing of software in said

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partitions on said at least one host processor (*col.5 lines 62-66, col.10 lines 1-22 and 64-67—device emulator of virtual machine monitor that interfaces between the monitor and the guest system and controls system resources and*); and

- a software application that owns a configuration policy for said data center and tracks persistence for respective domains to which each partition of said at least one host computer is assigned by said at least one system partition (*col.7 lines 17-55, col.10 line 1-col.11 line 10—virtual machine monitor track, schedules and handles request by its virtual machine for resources, memory mapping module of the manager intercepts from the guest mapping module and maps virtual memory pages to the actual hardware memory pages*).

b. **Claim 15** differs merely by statutory but contains limitations that are equivalent to claim 1, therefore it is rejected under the same basis.

Claim Rejections - 35 USC § 103

VII. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

VIII. Claims 2, 3, 16 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Waldspurger et al* (US 6,725,289) in view of *Osisek* (US 5,555,385).

a. **Per claim 2**, *Waldspurger et al* teach the virtual data center of claim 1 as applied above and use of a virtual machine manager, VMM, (*col.9 line54-col.10 line 67*); yet fail to explicitly teach wherein said at least one system partition comprises an ultravisor partition that includes said resource database and a resource management software application that assigns system resources to respective system and guest partitions and provides an index to the assigned

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system resource in said resource database, a command partition that owns a resource allocation policy for the host system on which it is loaded and that creates transactions that pass through a command memory channel between said command partition and said ultravisor partition for processing by said resource management software for reallocation of said system resources as specified in said transaction. However, *Osisek* teaches a virtual machine hypervisor that includes the host absolute storage and storage management software (*col.4 lines 2-29*) that allocates storage space of the system to virtual machine guests and assigns address space identifiers and access list for implementing commands and processing authorizations for which address spaces and application particular guests can access (*col.4 lines 30-67, col.5 lines 18-56, col.6 lines 5-57, col.7 lines 35-50*).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of *Waldspurger et al* and *Osisek* for the purpose of using a hypervisor that includes a data structure for maintaining resource allocation and accesses to the guest system in order to efficiently keep track of which guest systems are running and using what resources. The use of a hypervisor/ultravisor is well-known in the art for computer platform virtualization, and permits a host/manager/administrator to monitor the guest operating systems running concurrently on the host system and control their access the system's resources.

b. **Claims 16 and 27** contain limitations that are equivalent to claim 2 and are therefore rejected under the same basis.

c. **Per claim 3**, *Waldspurger et al* and *Osisek* teach the virtual data center of claim 2, *Osisek* wherein the software application is implemented in a system partition of one of said at

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least one host computers and the software application exchanges resource transactions with said command partition (*col.7 line 35-col.8 line 10*).

IX. Claims 4-7, 14 and 17-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Waldspurger et al* (US 6,725,289) in view of *Osisek* (US 5,555,385) in further view of *Kauffman et al* (US 6,199,179).

a. **Per claim 4**, *Waldspurger et al* and *Osisek* teach the virtual data center of claim 3 as applied above, yet fail to explicitly teach virtual data center of claim 3, wherein the software application maintains a persistent database of virtual partition definitions for at least one domain of said at least one host computer. However, *Kauffman et al* teach running a master console program for creating partition communities of independent operating system domains and loading environmental variables that define the system partitions and storing the resources associated with the partitions in non-volatile RAM and an adaptively-partitioned multi-processor computer system database for storing information relating to the state of the active operating system instances in the system (*col.9 line 25-col.10 line 14, col.10 lines 47-60, col.24 lines 13-43, col.24 line 49-col.25 line 64*). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of *Waldspurger et al* and *Osisek* with *Kauffman et al* for storing the virtual partition definitions in order to maintain the resources and configuration of each partition so that the partitions will not have to be configured again and re-defined each time upon failure of the system.

b. **Claims 17 and 18** contain limitations that are equivalent to claim 4 and are therefore rejected under the same basis.

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c. **Per claim 5**, *Waldspurger et al* and *Osisek* with *Kauffman et al* teach the virtual data center of claim 4, *Kauffman et al* further teach wherein the command partition stores a copy of the virtual partition definitions for said at least one domain for bootstrap purposes in the event of a partition failure or a hardware failure of a host computer (*col.10 lines 11-46, col.11 lines 1-38*).

d. **Claim 19** claims subject matter equivalent to claim 5 and is therefore rejected under the same basis.

e. **Per claim 6**, *Waldspurger et al* and *Osisek* teach the virtual data center of claim 2, yet fail to explicitly teach wherein upon activation of a partition, the software application selects a host computer of said at least one host computer having required resources for said activated partition, connects to a resource service running in a command partition of said host computer, and provides a definition of the activated partition and a start command to the resource service. However, *Kauffman et al* teach an initialized partition is able to have the selected resources necessary for initializing the partition and a partition definition and configuration is created at the master console program (*col.8 line 66-col.9 line 23, col. 10 lines 25-67*). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of *Waldspurger et al* and *Osisek* with *Kauffman et al* for storing the virtual partition definitions in order to maintain the resources and configuration of each initialized partition so that the partitions will not have to be configured again and re-defined each time upon failure of the system.

f. **Claim 20** contains limitations that are equivalent to claim 6 and is therefore rejected under the same basis.

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g. **Per claim 7**, *Waldspurger et al* and *Osisek* with *Kauffman et al* teach the virtual data center of claim 6, *Kauffman et al* wherein said command partition stores a copy of said resource database, uses said copy of said resource database to select appropriate resources for the activated partition, and creates a transaction to update said resource database via said command memory channel (*col.9 line 41-col.10 line 67*).

h. **Claim 21** contains limitations that are equivalent to claim 7 and is therefore rejected under the same basis.

i. **Per claim 14**, *Waldspurger et al* and *Osisek* teach the virtual data center of claim 3, yet fail to explicitly teach wherein a redundant software application is loaded in a system partition in a second host computer different from the host computer hosting said software application. However *Kauffman et al* teach creating a console program copy running in each partition in other host computer systems and operating systems (*col.9 line 40-col.10 line 31*). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of *Waldspurger et al* and *Osisek* with *Kauffman et al* for making and loading a console program into the partition of another host system in order for the management of the resources and partitions to be executed in other host systems.

X. Claims 8-13 and 22-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Waldspurger et al* (US 6,725,289) in view of *Kauffman et al* (US 6,199,179).

a. **Per claim 8**, *Waldspurger et al* teach the virtual data center of claim 1 as applied above, yet fail to explicitly teach wherein said software application monitors operation of said at least one host computer and, upon detection of host computer failure, chooses a new host

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computer for virtual partitions assigned to a failed host computer. However *Kauffman et al* teach a console program assigns resources of a new operating system or host if the used host computer fails, a backup system (*col.5 line 31-col.6 line 13, col.9 lines 8-64, col.10 lines 1-46, col.35 line 6-col.36 line 51*). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of *Waldspurger et al* with *Kauffman et al* for implementing a fail-over system that provisions backup host systems in case a failure occurs on the primary host system running the virtual environment.

b. **Claim 22** contains limitations that are equivalent to claim 8 and is therefore rejected under the same basis.

c. **Per claim 9**, *Waldspurger et al* teach the virtual data center of claim 1 as applied above, yet fail to explicitly teach wherein said software application assigns an interconnected set of system resources of said at least one host computer to a zone and respective partitions are assigned to the zones with the system resources required by the respective partitions, where a zone is unit of resource allocation for system resources of said at least one host computer within a computer network. However *Kauffman et al* teach the assignment of resources to partitions grouped into a community which involves grouping particular partitions together to share specific resources, wherein the communities can be used to create independent operating system domains (*col.9 lines 24-39, col.11 line 51-col.12 line 5, col.17 lines 13-27*). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of *Waldspurger et al* with *Kauffman et al* for implementing zones/communities wherein partitions can be grouped along with their necessary resources and operate together to share the resources, which efficiently allocates resources as shared resources to grouped

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partitions for shared use, as oppose to burdening and over-extending the system's resources by having to allocate individual resources to individual partitions.

d. **Claim 23** contains limitations that are equivalent to claim 9 and is therefore rejected under the same basis.

e. **Per claim 10**, *Waldspurger et al* with *Kauffman et al* teach the virtual data center of claim 9, *Kauffman et al* teach wherein said software application assigns new partitions to a host computer that does not include said software application by sending, over a network connection, a resource transaction to a command partition of the host computer that does not include said software application (*col.9 line 40-col.10 line 10, col.13 lines 13-46, col.23 lines 47-58*). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of *Waldspurger et al* with *Kauffman et al* for assigning new partitions to a host computer, because this allows partitions assigned to a host computer to be managed by that host computer's manager console and not a console external/remote to the host running the partitions.

f. **Claim 24** contains limitations that are equivalent to claim 10 and is therefore rejected under the same basis.

g. **Per claim 11**, *Waldspurger et al* with *Kauffman et al* teach the virtual data center of claim 10, *Kauffman et al* further teach wherein said software application enables migration of an active partition on a first host computer to a second host computer by transferring memory contents of the active partition from the first host computer to a target partition activated in the second host computer via said network connection (*col.9 line 40-col.10 line 10, col.13 lines 13-46, col.17 line 13-col.20 line 13, col.21 line 14-col.22 line 21, col.36 lines 20-38*).

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h. **Claim 25** contains limitations that are equivalent to claim 11 and is therefore rejected under the same basis.

i. **Per claim 12**, *Waldspurger et al* teach the virtual data center of claim 1, yet fail to explicitly teach wherein said configuration policy targets allocation of system resources to a zone based on at least one of quality of service guarantees, bandwidth guarantees, and physical location of respective host computers. However *Kauffman et al* teach relating the system resources in a configuration tree based on hardware, software and performance features of the nodes (*col.9 lines 25-39, col.11 line 1-col.12 line 61*). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of *Waldspurger et al* with *Kauffman et al* for allocating resources to particular zones and communities based on the features of the resources because these features determine the operating characteristics of the resources, wherein different zones and communities will have different resource requirements.

j. **Per claim 13**, *Waldspurger et al* teach the virtual data center of claim 1, yet fail to teach wherein said configuration policy is changeable by a user to permit changes in configuration of said system resources based on different system resource schedules at different times. However *Kauffman et al* teach the permitting the configuration tree changes based on the different actions and updates that affect the system resources (*col.23 line 26-col.24 line 11*). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of *Waldspurger et al* with *Kauffman et al* for allowing configuration changes and updates of the system resources to affect all of the resources associated with the

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changes, which is an obvious and predictable occurrence in order to keep the system synchronized.

k. **Claim 26** contains limitations that are equivalent to claim 13 and is therefore rejected under the same basis.

Conclusion

XI. The prior art made of record and not relied upon is considered pertinent to Applicant's disclosure: Brown et al (7200530), van Rietschote et al (7213246) and (7203944), Neiger et al (7035963).

Examiner's Note: Examiner has cited particular columns and line numbers in the reference(s) applied to the claims above for the convenience of the applicant. Although the specified citations are representative of the teachings of the art and are applied to specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested from the Applicant in preparing responses, to fully consider the references in entirety as potentially teaching all or part of the claimed invention, as well as the context of the cited passages as taught by the prior art or relied upon by the examiner. Should Applicant amend the claims of the claimed invention, it is respectfully requested that Applicant clearly indicate the portion(s) of Applicant's specification that support the amended claim language for ascertaining the metes and bounds of Applicant's claimed invention.

XII. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kristie Shingles whose telephone number is 571-272-3888. The examiner can normally be reached on Monday-Friday 8:30-6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rupal Dharia can be reached on 571-272-3880. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Kristie Shingles

Examiner

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/KDS/

/William C. Vaughn, Jr./

Supervisory Patent Examiner, Art Unit 2444